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On the Doctrine.

of  
Critical Days.

in

Fever.

By John Bellinger.

"Is plausible in theory, & true in experience."

Robert Jackson.

Concise & disconnected as these few observations may at first appear, still it is hoped, that they are of such a nature, & are so arranged, that, by a well informed mind, they may readily be referred to other & more extensive series of Physiological & Pathological facts, which may be adduced in their support.

Before proceeding to the consideration of the subject more immediately before me, I propose to make a few remarks upon the nature of critical terminations in general.

Acting upon a firm persuasion of the truth of the Humoral pathology, the Ancients naturally attributed the appearance of "critical discharges" to the evacuation of "morbid matter." So far their Theory was ingenious and plausible, & had their practice been rightly deduced from it, it might have been harmless if not beneficial. But in conceiving that those diseases in which these evacuations usually occurred were atonic in their immediate tendency; and that nature required the assistance of stimulant remedies to complete the operations by which they supposed the cure was effected; they drew their conclusions from false premises; not carefully investigating the

\* See Burns on Inflammation. Chutebush on Force-  
 Coopers & Traverses' Surgical essays, Chap. on Sutures, and  
 particularly a letter from D<sup>r</sup> Fane Minin inserted  
 Appear on Absorption. &c. &c. &c. &c.



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effects of the medicines they administered.

As experiments attempted a new system of Therapeutics, & experience justified the innovation, the Pathology, upon which the old method of cure was founded, came to be ridiculed and abandoned: and as in other revolutions the change was intended to be neither partial, nor temporary.

It has been usual for modern ingenuity to disclose the principle upon which these effects depend; and so clearly to unveil the mystery of nature's operations, that by establishing certain actions in the system, we bring diseases at once to a favourable crisis, which might <sup>otherwise</sup> be tedious in duration, distressing in their consequences, or fatal in their termination.\* Dropsy, for instance is no longer considered as so entirely dependant upon an equilibrium of the functions of certain systems



of rebels as to be cured by a clasp of medicines calculated to act on these alone. No - whatever establishes an action similar to the natural one, in other words, brings back the system to a healthy state, prevents, or removes the effusion, which is its most striking characteristic. Thus it has yielded, when the whole clasp of Diuretics has failed, to remedies apparently foreign in their application, to the nature of the case.

Disavowing therefore this tenet of the humoral pathologists, we look upon depositions in the urine, sweat, diarrhoeas &c not as testimonies of the expulsion of morbid matter, but as evidences of the recommencement of actions, which had been suspended during the violence of disease.

The desiderata then, in our Practice,

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are, to ascertain the nature of the deranged  
actions, and the means best calculated to  
induce the natural one.

The nature of acute diseases is generally  
well understood, their Pathology well defined  
and their treatment obvious: still we have  
often to lament, not our ignorance of Thera-  
peutics, but the inefficacy of our Materia Medica.  
Notwithstanding experience warrants our ascribing  
to certain of them, the property of exciting specific  
actions in the human system, they have often  
obstacles to remove before their effects can be  
manifested, and should these obstructions exceed  
the limits of their power, they fail in fulfilling  
our intentions. Others, after having a few times  
exerted their influence in our favour, appear to  
lose the power they formerly possessed over some  
individual constitutions, & become inert upon  
exhibition, or operate, what is more perplexing,

\* All modern works are full of these complaints, but for a body & feeling exposition of them, see Johnson on Tropical Climates, particularly the Chapter on Dysentery.

† See the Aphorisms and Books on Prognostics, of Hippocrates, for the substance of the doctrine, and his Book on Epidemics for the facts on which it is founded.

‡ Galen, Van Swieten, &c

P See Rees Cyclopaedia, Article "Critical Days."

a kind of retrograde action; aggravating rather than alleviating the distresses of our patients.\*

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The Subject I have chosen comes with it every circumstance of asseignity, plausibility & high authority to recommend it to our attention. yet must we not from the consideration of these alone, without carefully examining its other pretensions to our belief, subscribe to the doctrine; for the "Father of Medicine" was its parent, though it was fostered by some the most eminent of his successors; & was, & is still, supported with all imaginable learning & ingenuity; "in the opposition" we behold the names of Hippocrates, Aesculapius, Celsus, & a host of moderns. <sup>P</sup>  
 If it has been advanced with confidence, it has been opposed with resolution; its supposed inconsistency and absurd origin have been ridiculed; the doctrine of the humoral pathology, of which





it may well be considered an appendage, has been  
 overthrown; and the facts by which it is ~~supposed~~  
 said to be supported have been controverted.

It becomes us therefore scrupulously to investigate  
 its claims on our attention, & impartially to ex-  
 amine ~~the~~ the arguments of the dis-  
 putants ere we coincide with either party.

As however this essay is intended, not for the  
 amusement of the antiquarian, but rather for  
 the inspection of professors of the Science, to  
 state a few of the principal objections that have  
 been urged against it, and a brief account  
 of improvements suggested, is all I propose.

It may be thought unusual, as being intimately  
 connected with my subject, that I should en-  
 deavour to lay down some precise ideas of  
 power. I shall however refrain from entering  
 upon this debatable ground; for it is perhaps  
 less difficult to define the exact meaning

\* *Vine Copland's Appendix. To Richardson's  
Physiology, &c, &c, &c.*

† *Schroder on "Tropical Climates."*

† *Schroder's "Sketch of Febrile Diseases."*

P *Parry's Pathology & Therapeutics."*

of "life" <sup>\*</sup> than to give a just definition of "fever". A strict analysis and synthesis of the usual symptoms leave us either the bare word, stripped of all signification, or with no small portion of the Nosological table following in its train.

The pathognomonic now commonly insisted on, are the suppression of the secretions & excretions, & the inequilibrium of the circulation. <sup>†</sup> Nor can these be missed by Pathologists; for by adopting the former, we must necessarily exclude from our definition some forms of fever described by Jackson; <sup>‡</sup> and if we seize with "foliose hope" upon the latter we pull the whole of Parry's Pathology <sup>P</sup> about our ears.

The first objection to the doctrine of critical Days which I shall notice, is one of ancient date, and formally one upon which consider-

The first thing I saw when I came  
 to the top of the mountain was  
 a vast expanse of water, and  
 the sun was shining brightly  
 on the surface. The water was  
 so clear that I could see the  
 bottom of the lake. The  
 mountains were so high that  
 they seemed to touch the sky.  
 The air was so fresh that  
 it felt like a new world.  
 The view was so beautiful  
 that I could not believe my  
 eyes. The water was so  
 calm that it was like a mirror.  
 The mountains were so green  
 that they seemed to be alive.  
 The sun was so bright that  
 it was like a giant lamp.  
 The air was so sweet that  
 it was like a new perfume.  
 The view was so wonderful  
 that I could not describe it.  
 The water was so pure that  
 it was like a new crystal.  
 The mountains were so majestic  
 that they seemed to be gods.  
 The sun was so warm that  
 it was like a giant hand.  
 The air was so clean that  
 it was like a new breath.  
 The view was so inspiring  
 that it was like a new life.  
 The water was so soft that  
 it was like a new touch.  
 The mountains were so peaceful  
 that they seemed to be angels.  
 The sun was so gentle that  
 it was like a giant smile.  
 The air was so light that  
 it was like a new dance.  
 The view was so serene  
 that it was like a new song.  
 The water was so still that  
 it was like a new silence.  
 The mountains were so quiet  
 that they seemed to be a new  
 world.

able steps was laid. The following quotation  
 I consider sufficient to explain & remove  
 it. "The inconsistency of the doctrine has been  
 objected to it. The inconsistency observed by Celsus  
 is this; Hippocrates considers the fourth day  
 of each septenary as critical: hence the fourth  
 and the eleventh (taking the eighth as the  
 first of the second septenary) are critical.  
 But he assimilates the seventeenth with  
 these, as a fourth, whereas the seventeenth  
 is the third only, of the third septenary, for  
 the eleventh is the fourth from the seventh  
 but the seventeenth is only the third from  
 the fourteenth: this makes the twentieth the  
 last of the third septenary, and not the  
 twenty first.

Various conjectures were entertained  
 respecting the origin of these periodical move-  
 ments in fever. Some attributing them to

\* *Russ' Cyclopaedia*, Loc. cit.

† *Cullen's First Lines* "P. 118 & 122. imlasin.

‡ *Good's Study of Medicine*. vol. 2. p. 56.

the harmony of numbers, according to the Pythagorean Philosophy; & Celsus and others have conceived that Hippocrates was swayed by this absurd doctrine. But Van Swieten states the irregularity just stated, as a proof that Hippocrates deduced his numbers from a faithful observation of diseases." \* Cuius who has declared his experience on this subject to coincide with that of Hippocrates, has given a simple & beautiful solution of this supposed inconsistency; attributing it to a change in the fever from a quotidian, successively to a tertian & quartan type † and G. Fordyce who scarcely does justice to Cullen upon other points, unites with him upon the present, and justly complements him upon his ingenious examinations and explanation of the Greek distribution of critical days "‡

It has been urged that the energy of modern

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practice, by disturbing the course of the disease, prevents those appearances from being developed, which under the treatment pursued by Hippocrates, were usually manifested. No one, after studying the "Sketch of Febrile Diseases," and notwithstanding the vigorous & efficacious treatment therein recommended and pursued, still find the venerable author a champion of his theory, will look further for a refutation.

Considering the state of medical knowledge when the doctrine of crisis was promulgated, we must confess that the "humoral pathology" highly ingenious in itself received no small support from the appearances exhibited during the times that crises were supposed to occur. The violent agitation of the patient & aggravation of the symptoms, subsiding wholly or in part, upon the appearance of certain discharges, which, (where the patient was not too much ex

\* See not Ray's Pathology, and the absorption of foreign substances into the circulation, sufficient proof of this assertion? Vide also Rich's Anatomy

hausted by the previous continued violence or  
 successive exacerbations of the disease) were  
 followed by more or less rapid recovery, were  
 circumstances that afforded ample space for  
 the exercise of genius, and accordingly the  
 ancients improved it to the extent of their  
 opportunities. But when in process of time  
 this doctrine came to be exploded, every  
 subject in any manner connected with  
 its principles, underwent the invectives that  
 were heaped upon the general hypothesis.  
 We are not surprised then to see the one be-  
 fore us particularly distinguished by the un-  
 dertaking to establish its downfall; we know how-  
 ever that many points of that doctrine tho'  
 once out in obscurity, are again rising above  
 the horizon of medical Science.\*

It would be imitative here to enter  
 into any discussion, touching the causes of

generals, for an admission, that although disease be not seated in the fluids, yet there are often the vehicles of its causes.

\* Vide, Mead. Gaurin, Balfour, Lina and Jackson on Lues influence.

† "He may be regarded as laying down the following as the critical days in continued fever: the 5.<sup>th</sup>, 7.<sup>th</sup>, 9.<sup>th</sup>, 11.<sup>th</sup>, 13.<sup>th</sup>, 15.<sup>th</sup>, 17.<sup>th</sup>, 20.<sup>th</sup>. In other parts of his works he regards also the 4.<sup>th</sup> and 6.<sup>th</sup> and even the 21.<sup>st</sup> as critical days; so that in the first week, every day, after the disease has fully established itself, merits a disposition to a serious change; in the second week every other day; and in the third week every 3<sup>rd</sup> day. See *Good's Study of Medicine* vol 2.<sup>o</sup> p. 55.

what are considered critical terminations: all that we are concerned to know at present, since it is granted that they do occur, is whether they take place at stated periods.\*

If we receive the statements of all who have pretended to make observations on the termination of fever, we must admit almost every day from the third to the twenty first, as critical. Here we are opposed by an objection of no trifling importance. Hippocrates limited the termination of fever to ~~some~~ particular days,† and unless his observations are confirmed, his theory must be abandoned. It becomes the supporter of the doctrine then, for to furnish us with some clue, whereby we may extricate ourselves from this labyrinth of perplexities.

The primary object to be considered in calculating the duration of fever, is the

The first of these is the fact that the  
 world is not a uniform whole, but is  
 divided into many parts, each of which  
 has its own peculiar characteristics.  
 The second is that the world is not  
 a static entity, but is constantly  
 changing and evolving. The third is  
 that the world is not a simple  
 machine, but is a complex system  
 of many interacting parts. The fourth  
 is that the world is not a single  
 entity, but is a collection of many  
 different entities. The fifth is that  
 the world is not a single entity, but  
 is a collection of many different  
 entities. The sixth is that the world  
 is not a single entity, but is a  
 collection of many different entities.  
 The seventh is that the world is not  
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 of many different entities. The eighth  
 is that the world is not a single  
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 different entities. The ninth is that  
 the world is not a single entity, but  
 is a collection of many different  
 entities. The tenth is that the world  
 is not a single entity, but is a  
 collection of many different entities.

rule by which the time is to be regulated. The periodical revolution of twenty four hours (nursing from the accession of the fever) was the one universally adopted, so far as I have been able to discover, until the publication of Jackson's work on fever. For dyer, however proposed a different one, in as much as he wished to limit the ~~duration~~ accession of all cases of continued fever to one particular hour of the twenty four. Observing that this form of fever usually commenced its attack about 5 or 6 o'clock P.M. he proposed that we should consider it as always pursuing this course. He therefore made a scale as it were of the twenty four hours, commencing at 6 o'clock P.M. and ending at the same hour on the following day. This he divided equally at the hour 6 A.M. Now all fevers supervening between 6 P.M. and 6 A.M. were

\* "Fordyce on Fever."



to be regarded as commencing their attack, at  
 6 P.M. which stands at the head of the scale;  
 and their duration calculated accordingly.  
 But if a fever appeared between 6 A.M. and  
 6 P.M. its accession was fixed at 6 P.M. which  
 stands at the foot, and its duration numbered  
 from that point.\* Ingenious as this may  
 appear, and supported as it is by most cases  
 of continued fever, it is nevertheless too arbitra-  
 ry to be universally applied; and unless we  
 have one that may be adapted to every  
 emergency the objection will exist in full  
 force; for as we will perceive in the se-  
 quel, it has its origin in this very deficiency  
 of the common method of calculation.  
 Thus the combatants of the opposite party, no  
 longer contented ~~themselves~~ with ridiculing  
 the circumstances supposed by them to give  
 origin to the subject of debate, deny the facts

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which have hitherto been considered as its basis, and appeal at once to the observations and candour of mankind, for a decision in their favour. From the very nature of this objection, it is evident that the theory would soon be rejected by scientific men, as owing its existence to accident. Eclipses would thus occur as well one year as odd days: it would be waste of time, attended with disappointment to attempt to observe and calculate their appearance. But in the midst of this anarchy even as the Gaul has thrown his sword into the scale, behold, a Camillus marching to the rescue of the Capitol!

I will explain in as concise a manner as possible, the circumstances which suggested to the ingenious and comprehensive mind of Jackson, the improvements he has made & the facts he has collected for their support.

The first of these is the fact that the  
 world is not a uniform whole, but is  
 made up of many different parts, each  
 of which has its own peculiar character  
 and its own laws. This is the case with  
 the human mind, which is not a single  
 entity, but is composed of many different  
 faculties, each of which has its own  
 peculiar powers and its own limitations.  
 It is the duty of the philosopher to  
 study these faculties, and to determine  
 their proper limits and their proper  
 uses. This is the first step towards  
 the attainment of wisdom, and it is  
 the foundation of all true knowledge.  
 The second of these is the fact that  
 the human mind is not a passive  
 receptacle, but is an active power, which  
 is capable of creating its own ideas  
 and of forming its own judgments.  
 This is the case with all the faculties  
 of the mind, and it is the source of  
 all human progress and human  
 improvement. It is the duty of the  
 philosopher to study the powers of the  
 mind, and to determine their proper  
 limits and their proper uses. This is  
 the second step towards the attainment  
 of wisdom, and it is the foundation  
 of all true knowledge.

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We observe that the exacerbation or recurrence of fever frequently anticipated or postponed the time of its usual appearance by a longer or shorter period: and that frequently in the course of the disease, there supervened a fever of the same or of a different type. Perplexing as these circumstances must primarily have been, they finally led him to adopt a new method in calculating the duration of fever. For by anticipating or postponing the time of its usual appearance, not only the hour but the day on which an exacerbation or recurrence should appear, would be changed; and the time of crisis would be on an even day, <sup>or</sup> upon according to the civil day.

Again, suppose a fever of the same or of a different type to supervene upon one already existing, the crisis of the one would not be critical of the duration of the other. Conse-

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quently if we reckoned from the commencement of the first access, we should frequently find one of them to terminate on an even day, independent of the irregularity occasioned by anticipation or postponement of the paroxysm. He observed also that if relapses were considered as continuations of the original fever, crises would sometimes happen on even days. Accordingly, he calculated the duration of fever from its commencement, regulating the length of the day, not by twenty four hours, but by the time included between the accession of each paroxysm, and the succeeding one. Supervening fevers he calculated separately according to the same rule: and relapses he dated from the time of their occurrence. His practice shows these improvements to be founded on experience. Of 60 cases that

The first of these is the  
 fact that the world is  
 not a uniform whole  
 but a collection of  
 parts which are  
 constantly changing  
 and growing. The  
 second is the fact  
 that the world is  
 not a static whole  
 but a dynamic whole  
 which is constantly  
 changing and growing.  
 The third is the fact  
 that the world is  
 not a simple whole  
 but a complex whole  
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 changing and growing.  
 The fourth is the fact  
 that the world is  
 not a single whole  
 but a collection of  
 many wholes which  
 are constantly changing  
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terminated favourably, ten terminated on the third, two on the fifth, twenty on the seventh, two on the ninth, five on the eleventh, three on the thirteenth, and two on the seventeenth. Of nine which terminated fatally, one terminated on the sixth one on the seventh, six on the eighth, and one on the tenth."

The great proportion of fatal terminations on even days attracted his attention, and he found that in referring a crisis to the hour of death he was mistaken. That in reality the crisis took place as usual on the odd day, but that the patient frequently lingered on to the even. "Yet death sometimes happened on the even days from another cause. The decline of the paroxysm which in many cases was hardly perceptible in others was plain. The disease terminated; but another recurring, after a short inter-

\* Jackson as Fencer \*

val, speedily put a period to existence." "In such cases the patient dies in the height of the paroxysm carried off by convulsions apoplexy or other accident." \* The anticipation or postponement of paroxysms, suppression of other fevers, relapses, & varying the time of crisis to the hour of death, have no doubt been the causes of the confusion apparent in the termination of fever when calculated according to the common method.

We may therefore consider these improvements as giving stability to the doctrine, as establishing a new era in its chronology, as producing a grand character in its existence.

